



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/803,900	03/19/2004	Zeev Alecyraz	P24775	6703
7055 7590 08/03/2007 GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARKE PLACE RESTON, VA 20191			EXAMINER BERHANU, SAMUEL	
			ART UNIT 2838	PAPER NUMBER
			NOTIFICATION DATE 08/03/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

gbpatent@gbpatent.com
pto@gbpatent.com

TH

Office Action Summary

Application No.

10/803,900

Applicant(s)

ALEYRAZ ET AL.

Examiner

Samuel Berhanu

Art Unit

2838

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11, 13-27 and 29-43 is/are rejected.
- 7) ☒ Claim(s) 12 and 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 09/07/2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

1. In view of the Appeal Brief filed on 04/30/2007, PROSECUTION IS HEREBY REOPENED. A new ground of rejection set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 17 and 43 are rejected under 35 U.S.C. 102(b) as being anticipated by Iwase (US 6,255,008).

Regarding Claim 17, Iwase discloses in Figure 1, a power unit for an electronic device, comprising: a fuel cell (36); a control unit (20) structured and arranged to control and regulate said fuel cell, a communication interface (Input/output Port, element 20d) structured to provide two-way communication between the control unit and the electronic device (noted that the input/output port is taking information from the electronic device and the power supplies and also send out information to the electronic device and the power supplies accordingly, therefore it has provides two way communication) .

Regarding Claim 43, Iwase discloses in Figure 1, a process for control and regulation of an electronic device powered by a fuel cell, said process comprising: coupling a fuel cell (36) to an electronic device; controlling operation of the fuel cell via a control unit (20); and establishing two-way communication between the control unit and the electronic device (noted that the input/output port is taking information from the electronic device and the power supplies and also send out information to the electronic device and the power supplies accordingly, therefore it has provides two way communication) .

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2838

5. Claims 1-2, 4, 9, 16, 33-34, 36-37 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwase (US 6,255,008) in view of Cabasso et al. (US 6,987,163).

Regarding Claim 1, Iwase discloses in Figure 1, a power unit for an electronic device, comprising: a fuel cell (36) having a low output voltage (Being "Low" is relative); a conversion device (38) coupled to said fuel cell to convert an input voltage to a higher output voltage to operate the electronic device (column 4, lines 10-25).

In the fuel cell system of the invention, the voltage adjusting device may be formed by a DC/DC converter that is suitable to adjust, that is, increase or decrease, the voltage outputted from the fuel cell, to a desired value.

Iwase does not disclose the output voltage of the fuel cell being as low as 0.3v. Cabasso discloses the output voltage of a fuel cell being between 0.3v and 1.0v. (Column 18, lines 59-61). It would have been obvious to a person having ordinary skill in the art at the time of this invention to substitute Iwase fuel cell with Cabasso in order to have a high thermal stable fuel cell power supply.

Regarding Claim 2, Iwase discloses wherein said conversion device comprises a DC/DC converter.

Regarding Claim 4, Iwase discloses in Figure 1, further comprising a backup battery (40) coupled to said conversion device in order to at least supplement the output of DC/DC converter.

Regarding Claim 9, Iwase discloses in Figure 1, a control unit (20) structured and arranged to control operation of said conversation device.

Regarding Claims 16 and 32, Iwase discloses in Figure 1, wherein said fuel cell is an individual fuel cell.

Regarding Claim 33, Iwase discloses in Figure 1, a process for control and regulation of an electronic device powered by a fuel cell, said process comprising:
coupling a fuel cell (36) to an electronic device; boosting an output voltage of the fuel cell as low as 0.3V to a level required by the electronic device (using a DC/DC converter boosts fuel cell voltage).

Regarding Claim 34, Iwase discloses in Figure 1, wherein the boosting of the output voltage is performed by a DC/DC converter.

Regarding Claim 36, Iwase discloses in Figure 1, further comprising supplementing the output of the DC/DC converter with a backup battery, whereby the fuel cell is utilized at a maximum efficiency capacity.

Regarding Claim 37, Iwase discloses in Figure 1, the process in accordance with claim 36, further comprising boosting a voltage of said backup battery to a necessary level via a battery up converter (DC/DC converter).

Regarding Claim 41, Iwase discloses in Figure 1, further comprising controlling the individual components of the power unit via a control unit (20).

6. Claims 3, 5, 10, 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwase in view of Cabasso in further view of Komatsu et al. (US 6,917,179).

Regarding Claim 3, neither Iwase nor Cabasso discloses an up converter coupled to

the DC/DC converter. Komatsu discloses an up converter (figure 1, element 12) coupled to said DC/DC converter (Element 19) in order to boost an output voltage of said DC/DC converter to the higher voltage to operate the electronic device. It would have been obvious to one of ordinary skill in the art at the time of this invention to take the teachings of Komatsu, and add an up converter to the device of Iwase in order to further increase the voltage outputted to the device

Regarding Claim 5, Komatsu discloses the power unit in accordance with claim 4, further comprising a battery up converter (figure 1, element 12) coupled to said backup battery to boost a voltage of said backup battery to a necessary level.

Regarding Claim 10, Iwase discloses s a backup battery connected to the DC/DC converter, but does not expressly disclose an up converter coupled to the DC/DC converter. Komatsu discloses a device in order to at least supplement the output of DC/DC converter (Figure 1, element 19); and an up converter (Element 12). It would have been obvious to one of ordinary skill in the art at the time of this invention to take the teachings of Komatsu, and add an up converter to the device of Iwase in order to further increase the voltage outputted to the device.

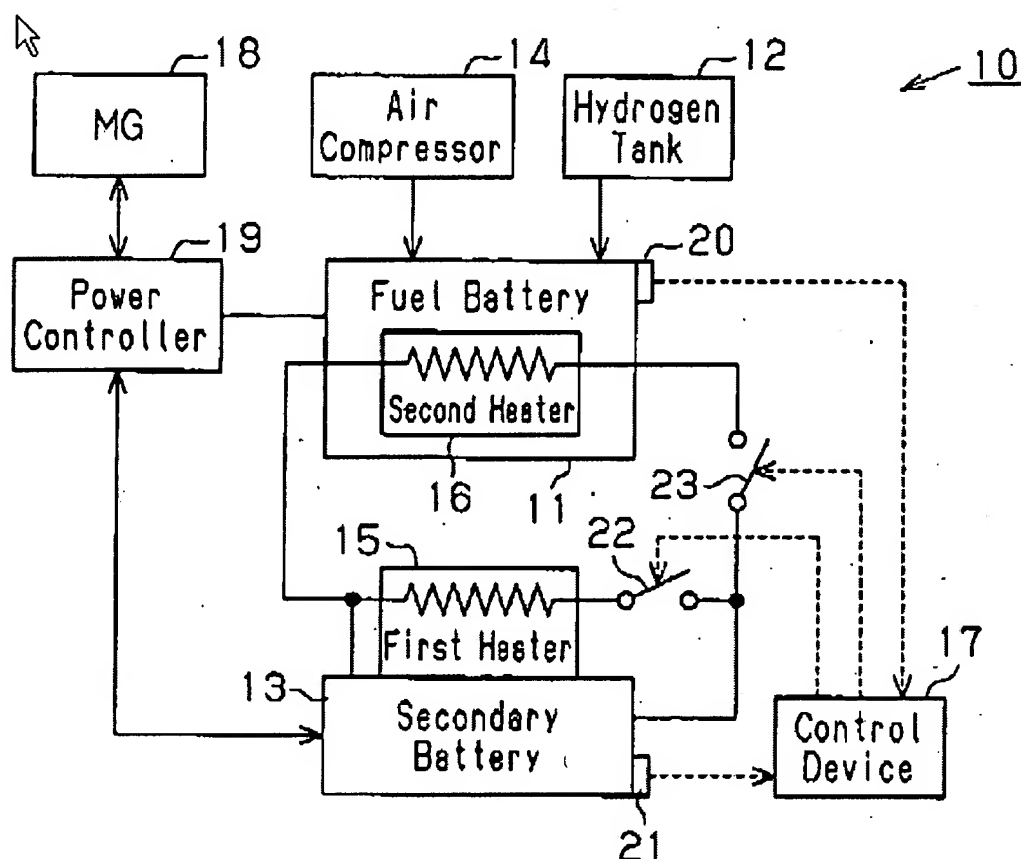
Regarding Claim 35, Iwase discloses the process in accordance with claim 34, but does not expressly disclose an up converter. Komatsu discloses wherein the boosting of the output voltage further comprises boosting the output voltage of the DC/DC converter (figure 1, element 19) to the higher voltage via an up converter (element 12) to operate the electronic device. It would have been obvious to one of ordinary skill in the art at the

Art Unit: 2838

time of this invention to take the teachings of Komatsu, and add an up converter to the device of Iwase in order to further increase the voltage outputted to the device.

7. Claims 6, 7, 24-26 38,39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwase in view of Cabasso in further view of Isogai (US 2004/0219409).

Regarding Claims 6, 24 and 38, Iwase in view of Cabasso disclose the power unit in accordance with claim 4, but do not expressly disclose a heating device. Isogai discloses a heating device coupled to said backup battery and to said fuel cell that is structured and arranged to heat said fuel cell (see figure below).



It would have been obvious to one having ordinary skill in the art at the time of this invention to include a heating device as taught by Isogai in order to heat the fuel cell so that the desired output can be obtained.

Regarding Claims 7, 25 and 39, Isogai discloses the power unit in accordance with claim 6, further comprising a temperature-measuring device (20) coupled to said fuel cell to monitor fuel cell temperature.

Regarding Claim 26, Isogai discloses in Figure 1, said control unit is coupled to said heating device and to said temperature measuring device in order to control and regulate the temperature of said fuel cell.

8. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iwase in view of Cabasso in further view of Komatsu et al. and in view of Isogai.

Regarding Claim 11, Isogai discloses a heating device (16, 15) coupled to said backup battery (13) and to said fuel cell (11) that is structured and arranged to heat said fuel cell (see abstract); and a temperature measuring device (20, 21) coupled to said fuel cell to monitor fuel cell temperature, wherein said control unit (17) is further coupled to said heating device and to said temperature measuring device in order to control and regulate the temperature of said fuel cell. It would have been obvious to one having ordinary skill in the art at the time of this invention to include a heating device as taught by Isogai in order to heat the fuel cell so that the desired output can be obtained.

9. Claims 13-15 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwase in view of Cabasso et al. in further view of Yoon et al. (US 6,160,382).

Regarding Claim 13, Iwase in view of Cabasso disclose all the limitation of claim 9, but do not expressly disclose an ND convert or a D/A converter. Yoon discloses an A/D converter structured to receive voltage and current data from said conversion device (Figure 4, element 80); a D/A converter structured to output reference voltage and current levels (Element 30); and a data processor arranged to receive data from said A/D converter and to forward data to said D/A converter (Element 10). It would have been obvious to one of ordinary skill in the art at the time of this invention to combine the teaching of Yoon's A/D and D/A converter with the device of Iwase in view of Cabasso, in order to monitor the status of the device as well as the controlling the fuel cell and battery.

Regarding Claim 14, Yoon further discloses the power unit in accordance with claim 13, further comprising: a charger interface coupled to said data processor (column 8, lines 42-48); and a battery monitor coupled to said charger interface structured and arranged to collect battery data (Column 8, lines 29-42).

Regarding Claim 15, Yoon further discloses the power unit in accordance with claim 13, further comprising a host interface structured to provide two-way communication between said control unit and the electronic device (Figure 4, element 10).

Regarding Claim 42, Iwase in view of Cabasso disclose all the limitations of claim 41, but neither expressly discloses two-way communication between the control unit and the electronic device. Yoon discloses a monitoring and controlling device that utilizes two-way communication between the control unit and a battery (Figure 1, element 10). It would have been obvious to a person having ordinary skill in the art to

modify Iwase with the teachings of Yoon, and provide communication between the electronic device and the control circuit, in order to know the status of the device power demand, as well as informing the device of a low power situation.

10. Claims 18-19 and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwase (US 6,255,008) in view of Cabasso et al. (US 6,987,163).

Regarding Claim 18, Iwase discloses in Figure 1, a fuel cell (36) is an individual fuel cell having a low voltage, said power unit further comprises a conversion device (38) coupled to said fuel cell to convert an input voltage to a higher output voltage to operate the electronic device (column 4, lines 10-25).

In the fuel cell system of the invention, the voltage adjusting device may be formed by a DC/DC converter that is suitable to adjust, that is, increase or decrease, the voltage outputted from the fuel cell, to a desired value.

Iwase does not disclose the output voltage of the fuel cell being as low as 0.3v. Cabasso discloses the output voltage of a fuel cell being between 0.3v and 1.0v. (Column 18, lines 59-61). It would have been obvious to a person having ordinary skill in the art at the time of this invention to substitute Iwase fuel cell with Cabasso in order to have a high thermal stable fuel cell power supply.

Regarding Claim 19, Iwase discloses wherein said conversion device comprises a DC/DC converter.

Regarding Claim 21, Iwase discloses in Figure 1, further comprising a backup battery (40) coupled to said conversion device in order to at least supplement the output of DC/DC converter.

Regarding Claim 22, Iwase discloses in Figure 1, the process in accordance with claim 36, further comprising boosting a voltage of said backup battery to a necessary level via a battery up converter (DC/DC converter).

Regarding Claim 23, Iwase discloses in Figure 1, wherein said control unit (20) is coupled to said conversation device, backup battery, and battery up converter in order to control and regulate the energy supplied to the electronic device.

11. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iwase in view Cabasso in further view of Komatsu.

Regarding Claim 20, Komatsu discloses wherein the boosting of the output voltage further comprises boosting the output voltage of the DC/DC converter (figure 1, element 19) to the higher voltage via an up converter (element 12) to operate the electronic device. It would have been obvious to one of ordinary skill in the art at the time of this invention to take the teachings of Komatsu, and add an up converter to the device of Iwase in order to further increase the voltage outputted to the device.

12. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iwase in view of Cabasso in further view of Woodward ET. al. (US 4,563,630).

Regarding Claim 27, Iwase in view of Cabasso disclose the limitations of claim 18, which this claim is dependent upon. Neither Iwase nor Cabasso discloses a dump resistor coupled to said conversion device that is structured and arranged to consume additional load from said fuel cell. Woodward teaches of using a dump resistor in order to hold the total load on a power supply constant during varying of loads (Column 1, lines 40-46). It would have been obvious to one of ordinary skill in the art at the time of

this invention to include a dump resistor as taught by Woodward in order to maintain stability when loads are added or removed from the system.

13. Claims 29 and 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwase in view of Yoon et al. (US 6,160,382).

Regarding Claim 29, Yoon discloses an A/D converter structured to receive voltage and current data from said conversion device (Figure 4, element 80); a D/A converter structured to output reference voltage and current levels (Element 30); and a data processor arranged to receive data from said A/D converter and to forward data to said D/A converter (Element 10). It would have been obvious to one of ordinary skill in the art at the time of this invention to combine the teaching of Yoon's A/D and D/A converter with the device of Iwase in view of Cabasso, in order to monitor the status of the device as well as the controlling the fuel cell and battery.

Regarding Claim 30, Yoon discloses: a charger interface coupled to said data processor (Column 8, lines 42-48); and a battery monitor coupled to said charger interface structured and arranged to collect battery data (Column 8, lines 29-42).

Regarding Claim 31, Yoon discloses a host interface structured to provide two-way communication between said control unit and the electronic device (figure 4, element 10).

14. Claims 8, 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwase in view of Cabasso et al. in further view of Woodward et al (US 4,563,630).

Regarding Claim 8, neither Iwase nor Cabasso discloses further comprising a dump resistor coupled to said conversion device that is structured and arranged to consume

Art Unit: 2838

additional load from said fuel cell. Woodward teaches of using a dump resistor in order to hold the total load on a power supply constant during varying of loads (Column 1, lines 40-46). It would have been obvious to one of ordinary skill in the art at the time of this invention to include a dump resistor as taught by Woodward in order to maintain stability when loads are added or removed from the system.

Regarding Claim 40, neither Iwase nor Cabasso discloses the process of consuming additional load from the fuel cell via a dump resistor coupled to the conversion device that is structured and arranged to consume additional load from said fuel cell. Woodward teaches of using a dump resistor in order to hold the total load on a power supply constant during varying of loads (Column 1, lines 40-46). It would have been obvious to one of ordinary skill in the art at the time of this invention to include a dump resistor as taught by Woodward in order to maintain stability when loads are added or removed from the system.

Response to Arguments

15. Applicant's arguments, see page 11, filed 04/30/2007, with respect to the rejection(s) of claim(s) under **35 USC § 103** have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Iwase (US 6,255,008).

Allowable Subject Matter

Claims 12 and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

14. The following is a statement of reasons for the indication of allowable subject matter: Claims 12 and 28 recite, inter alia, wherein the control unit is coupled to said dump in order to control and regulate operation of said converter. The above limitation is not disclosed, taught, or suggested in the art of record, nor would it have been obvious to one of ordinary skill in the art to modify the art of record to meet the above limitation.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel Berhanu whose telephone number is 571-272-8430. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl Easthom can be reached on 571-272-1989. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


KARL EASTHOM
SUPERVISORY PATENT EXAMINER